

"MARKED-UP" CLAIMS PURSUANT TO 37 C.F.R. § 1.121

1. (once amended) A fuel additive dispensing system, comprising:
 - a housing, adapted to be affixed to a fuel dispenser having a fuel dispensing hose;
 - a hydraulic module, disposed at least partially within said housing, having a fluid input adapted to be coupled to at least one source of fuel additive and a fluid output flow adapted to be coupled to said fuel dispensing hose to introduce said additive into a stream of fuel delivered through said fuel dispensing hose;
 - control circuitry, coupled to said hydraulic module, for generating electrical control signals applied to said hydraulic module to cause a controlled amount of said additive to be released from said at least one source to flow through said fluid input and fluid output and into said fuel dispensing hose;

wherein said controlled amount of said additive is adjusted based upon measurements of past performance of said hydraulic module.
- [2. A fuel additive dispensing system in accordance with claim 1, wherein said controlled amount of said additive is determined based upon measurements of past performance of said hydraulic module.]
21. (once amended) A method of dispensing a fuel additive, comprising:
 - (c) coupling a fluid input of a hydraulic module to a source of said additive;
 - (d) coupling a fluid output of said hydraulic module to a fuel dispensing hose;
 - (c) electrical signals to said hydraulic module to cause a controlled amount of said additive to flow from said source, through said hydraulic module, and into said stream of fuel flowing through said fuel dispensing hose;

(d) obtaining measurements of performance of said hydraulic module;

wherein said controlled amount of said additive is adjusted based upon said measurements of past performance of said hydraulic module.
- [22. A method in accordance with claim 21, further comprising the step of:
 - (d) obtaining measurements of performance of said hydraulic module;

wherein said controlled amount of said additive is determined based upon said measurements of past performance of said hydraulic module.]

41. (once amended) A fuel additive dispensing system in accordance with any of claims 1 and 3 through 20, wherein said control circuitry is adapted to be coupled to a retail point-of-sale system including a point-of-sale server for controlling a fuel dispensing transaction.

48. (once amended) A method in accordance with claim [42] 46, further comprising dispensing a predetermined amount of said additive.

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REMARKS

1. *Status of the Application.* Claims 1-50 are pending in the application. In the Office Action, claims 43 and 48 were objected to due to informalities, claim 2 was rejected under 35 U.S.C. § 112, claims 1, 2, 4, 6, 7, 10-12, 17-19, 21, 22, 24, 26, 27, 30-32, and 37-39 were rejected under 35 U.S.C. § 102, and claims 3, 5, 8, 9, 13-16, 20, 23, 25, 28, 29, 33-35, and 40 were rejected under 35 U.S.C. § 103. Claims 1, 21, 41, and 48 are amended herein, and claims 2 and 22 are canceled herein. No new matter is added by way of these amendments.
2. *The Claim Objections.* Claims 43 and 48 were objected to as reciting the same limitations. Claim 48 is amended herein to depend from claim 46 instead of claim 42. The basis of the objection is thereby obviated; withdrawal of the objection is respectfully requested.
3. *The Section 112 Rejections.* Claim 2 was rejected under 35 U.S.C. § 112, with the Office Action alleging that “[i]t is unclear what is meant by ‘measurements of past performance’” therein. According to the Office Action, “[p]ast performance may be measured by word of mouth to the gasoline station manager, who inputs different ratios based upon previous results obtained from experiments with a new additive or under different driving conditions. The fuel dispenser could also change a mixture itself based upon perceived losses of additive if, for example, the additive degraded a certain percentage over the distance it traveled to the mixture point or to a measurement point where the final mixture ratio could be assessed.” It is respectfully submitted that the Office Action’s reasoning in this regard is misplaced.

The comments quoted above suggest that the Office Action fails to appreciate the literal meaning of claim 2 (whose limitations have been incorporated into claim 1 by way of the foregoing amendments). In particular, the Office Action’s comments suggest that the amount of additive dispensed is controlled based upon measurements of past performance *of the vehicle into which fuel and additive are being dispensed*, rather than past performance “of the hydraulic module,” as claim 2 (and now, claim 1) recites.

The following language from the specification is germane to the § 112 rejection:

“Since the timing sequences for the opening and closing of solenoid valves can be affected by operating temperature, fluid pressure, flow rate, valve wear, solenoid type (e.g., AC or DC), and other factors, all of which can impact metered volume, dispensing unit 102 maintains a real-time log of valve timing, cumulative additive volume injected since a predetermined starting point and target cumulative volume injected. This data is processed by computer-controlled algorithms to enable *automatic sensing, correction, and ensuing adjustment of subsequent valve timing and injected volumes to optimize metering accuracy*. In one embodiment, *adjustment of valve timing and injected volumes can be based upon assessment of past performance of the metering system and current hydraulic conditions as detected by the various sensors in the hydraulic module*. This is referred to as ‘adaptive metering’ functionality.

Specification, p. 15, lines 2-12. (emphasis added).

From the foregoing excerpt, it is clear that “adaptive metering” functionality relies upon assessment of sensor data reflecting past performance of *the hydraulic module*, not past performance of a vehicle into which fuel and additive are being dispensed. The Office Action’s comment that “[p]ast performance may be measured by word of mouth to the gasoline manager” cannot be reconciled with the language of claim 2. The operating parameters measured to assess past performance of the hydraulic module are not susceptible to human evaluation so as to be communicated “by word of mouth,” but rather involve precise measurements of injected volumes, valve timing signals, and the like.

The Office Action’s comment that the mixture might be changed “based upon perceived losses of additive if, for example, the additive degraded a certain percentage over the distance it traveled to the mixture point or to a measurement point where the final mixture could be assessed” is further revealing of the Office Action’s erroneous interpretation of claim 2. The “past performance of the hydraulic module” is not measured through assessment of the “final mixture ratio” as the Office Action suggests. Rather, as discussed above, the “past performance” is assessed within the hydraulic module, and involves acquisition of sensor data reflecting amounts of additive injected, valve timing, and the like.

In view of the foregoing, it is submitted that claim 2 is not at all indefinite, and the recitation of “past performance of *the hydraulic module*” finds abundant support in the

specification. Reconsideration and withdrawal of the § 112 rejection – to the extent that it might be applied to claims 1 and 3-20 now that claim 2 has effectively been incorporated into claim 1 – is therefore requested.

4. *The Section 102 Rejections.* Claims 1, 2, 4, 6, 7, 10-12, 17-19, 21, 22, 24, 26, 27, 30-32, and 37-39 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,163,586 to Zinsmeyer (“*Zinsmeyer*”). The Office Action alleges that each element of the invention recited in claims 1 and 21 is disclosed by *Zinsmeyer*. However, it is respectfully submitted that the Office Action misconstrues at least one critical recitation in the claims, and it is only through such misconstruction that anticipation of the claimed invention can be alleged.

Section 102(b) bars patentability if “the invention was ... described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.” 35 U.S.C. § 102(b). In order for a claim to be anticipated under § 102(b), each and every element of the claim must be present in the prior art cited. *See MPEP § 2131; Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It is submitted that *Zinsmeyer* fails to teach or suggest at least one significant element of the invention disclosed and claimed in the present application, such that the § 102 rejection cannot stand.

As a preliminary observation, there is no basis for the Office Action’s assertion that *Zinsmeyer* discloses “a housing adapted to be affixed to a fuel dispenser.” In each of the three embodiments disclosed by *Zinsmeyer*, the additive dispensing subsystem is incorporated into the fuel dispenser itself, and as such does not have a “housing” as that term must be interpreted in light of the specification.

The failure of *Zinsmeyer* to disclose a housing for the fuel additive system is no mere trivial distinction over the invention disclosed and claimed in the present application. Indeed, the configuration of the fuel additive system within a housing separate from the fuel dispensing unit is a significant aspect of the present invention, inasmuch as systems in accordance with the present invention are capable of being retrofitted onto existing fuel dispensing stations. As noted

in the specification, "the rigid (e.g., steel) external housing of dispensing unit 102 is sized and shaped so as to complement the configuration of the side of fuel dispenser 104, making the mating of dispensing unit 102 with fuel dispenser [104] natural and aesthetically inconspicuous. Further, fuel dispenser side panel 106 may be reattached to the exterior side of dispensing unit 102, so as to preserve existing color schemes, brand name logos, and the like." Specification, p. 9, lines 23-27.

Zinsmeyer, by contrast, contemplates only integrated systems wherein the fuel dispensing system is incorporated into a fuel dispensing station, thereby rendering the *Zinsmeyer* invention physically and economically impractical to retrofit onto existing fuel dispensers.

More significant than *Zinsmeyer*'s failure to disclose a housing as disclosed and claimed in the present application, however, is the lack of teaching or suggestion in *Zinsmeyer* to control the amount of additive dispensed, and in particular, *Zinsmeyer*'s failure to teach or suggest adjusting the amount of additive dispensed based upon measurements of past performance of the hydraulic module.

As discussed above in connection with the § 112 rejections, it is respectfully submitted that the Office Action has fundamentally misconstrued the recitation in the claims that the amount of additive dispensed is controlled based measurements upon past performance of the hydraulic module, this feature of the invention having been incorporated into each independent claim by way of the foregoing amendments. In this regard, the Office Action states (with reference to claims 2 and 22) that "the amounts of additive can be changed easily by changing the mixing ratios in the control computer based on *prior reported performance of a particular mixture of additives and fuels*." As noted above, this characterization cannot be reconciled with the literal language of the claims, which call for the amount of additive dispensed to be controlled by "measurements of past performance of the **hydraulic module**," not based upon the performance of a fuel dispensed, as the Office Action seems to suggest. Indeed, it is not entirely clear what is meant by the "performance of a particular mixture of additives and fuels" referred to in the Office Action; presumably, this is intended to refer to observed performance of a fuel-consuming engine into which fuel is dispensed. In any case, it is clear that neither the Office

Action nor *Zinsmeyer* contemplates assessing the performance of the additive dispensing module and adjusting the amount of additive dispensed based upon such assessment.

Owing to the foregoing amendments to claims 1 and 21, including the “adaptive metering” functionality as part of the claimed invention, it is believed that each of the independent claims is patentably distinguishable from *Zinsmeyer*, which discloses no such methodology for controlling the amount of additive dispensed. Reconsideration and withdrawal of the § 102 rejections is therefore requested.

5. *The Section 103 Rejections.* Claims 3, 5, 8, 9, 13-16, 20, 23, 25, 28, 29, 33-35, and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Zinsmeyer* in view of various other references. As discussed below, the Assignee respectfully challenges this rejection.

A rejection based on §103(a) must establish three basic criteria in order to establish a *prima facie* case of obviousness. “First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combined referenced teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP §§706.02(j); *see also* 2142. Specifically, since “invention itself is the process of combining prior art in a non-obvious manner,” to establish obviousness the “Examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998). Examiners are forbidden from “the use of hind-sight in the selection of references that comprise the case of obviousness.” *Id.*

As with all rejections, the burden is on the Examiner to establish an “unrebutted *prima facie* case of obviousness.” *Id.* at 1455. “An applicant may specifically challenge an obviousness rejection by showing that the [Examiner] reached an incorrect conclusion of obviousness or that the [Examiner] based its obviousness determination on incorrect factual predicates.” *Id.* The

Assignee respectfully submits that the Examiner has not presented a *prima facie* case of obviousness as to the present rejections.

Claims 3, 5, 8, 9, 16, 20, 23, 25, 28, 29, and 40 were rejected as being unpatentable over *Zinsmeyer* in view of U.S. Patent No. 6,052,629 to Leatherman et al. ("Leatherman"). According to the Office Action, *Leatherman* discloses a graphics-based, Internet-based fuel dispenser.

It is believed that the foregoing remarks regarding the § 102 rejections are equally applicable to the § 103 rejections, inasmuch as it is believed that *Zinsmeyer* fails to teach or suggest a fuel additive dispensing system in which the amount of additive dispensed is adjusted based upon measurement and assessment of past performance of the hydraulic module and hydraulic conditions. With regard to this feature, *Leatherman* adds nothing of relevance, such that no *prima facie* case of obviousness is established. That is, neither *Zinsmeyer* nor *Leatherman* teaches or suggests assessing the past performance of the hydraulic module that dispenses additive in order to adjust the amount of additive dispensed in subsequent transactions, such that even if the proposed hypothetical combination of *Zinsmeyer* and *Leatherman* were made, the literal language of the claims would not be met.

With regard to claims 5 and 25, the Office Action suggests that *Zinsmeyer* contemplates dispensing additive with an accuracy of 0.4%. It is submitted, on the contrary, that *Zinsmeyer* contemplates dispensing *fuel* (whether or not additive is included) at an accuracy of 0.4%, as is customarily required by weights and measures regulators. *Zinsmeyer* notes that when the amount of additive per unit of fuel dispensed is low, the addition of the additive "will probably not be an issue" with respect to the weights and measures requirement of about 0.4%. *Zinsmeyer*, col. 2, line 13-14. On the other hand, *Zinsmeyer* further observes that "when the additive is of a larger volumetric ratio and becomes a significant portion of the fuel delivery, relative to the tolerated errors of fuel metering, the measured additive volume dispensed will have to be added to that of the fuel delivery for transaction purposes, and the accuracy of measurement will probably have to meet the 0.4% [required accuracy]." *Zinsmeyer*, col. 2, lines 18-24. That is, *Zinsmeyer* clearly contemplates that the measurement of *fuel delivery* fall within the 0.4% requirement, and that

this tolerance can be adversely affected if the volume of additive added to the fuel becomes significant.

By contrast, claims 5 and 25 of the present application call for the dispensing of *additive* within an accuracy of 0.75%. In the present application, measurement of fuel is performed separately from the measurement of fuel. *Zinsmeyer*, on the other hand, notes that “[t]he simplest and preferred method is to inject the additive into the fuel at a point that is upstream of the meter in the fuel dispenser. In that way, the additive is measured along with the fuel.” *Zinsmeyer*, col. 2, lines 25-28. It is the measured fuel or fuel/additive mixture that *Zinsmeyer* contemplates dispensing at an accuracy of 0.4%, not the additive.

Thus, it is submitted that neither *Zinsmeyer* nor *Leatherman*, taken alone or in the proposed hypothetical combination, teaches or suggests a fuel additive dispensing system or method as disclosed and claimed in the present application. As discussed in connection with the § 102 rejection above, *Zinsmeyer* wholly fails to teach or suggest a fuel additive dispensing system in which the amount of additive dispensed is adjusted based on assessment of past performance of the hydraulic module that dispenses the additive; *Leatherman* adds nothing of substance in this regard. Reconsideration and withdrawal of the § 103 rejection is therefore requested.

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IN RE: APPLICATION S.N. 09/502,899
STOUT ET AL.
RESPONSE TO APRIL 26, 2001 OFFICE ACTION

CONCLUSION

In view of the foregoing amendments and remarks, it is believed that each of the pending claims in the present application recites subject matter neither taught nor suggested by the prior art, and that the application as a whole is in proper form and condition for allowance. Reconsideration and withdrawal of the objections and rejections is therefore requested, such that the application may advance to issue at the earliest possible date. If the Examiner believes that the application can be placed in even better condition for allowance, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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